

CLAIMS

WHAT IS CLAIMED IS:

*Sub B1*

1. A film-forming composition comprising a continuous aqueous phase and a dispersed phase, the dispersed phase comprising (i) a particulate polymer or emulsified liquid prepolymer, and (ii) a coalescent aid comprising an ester having the formula  $\text{RCOOX}$  wherein R and X are independently hydrocarbyl or substituted hydrocarbyl and at least one of R and X comprises at least two unsaturated carbon-carbon bonds.

2. The film-forming composition of claim 1 wherein R and X independently comprise about 1 to about 30 carbon atoms.

3. The film-forming composition of claim 1 wherein R and X independently comprise about 1 to about 30 carbon atoms and, in combination, contain no more than about 35 carbon atoms.

4. The film-forming composition of claim 1 wherein R and X each contain an unsaturated carbon-carbon bond.

*4*  
5. The film-forming composition of claim 1 wherein R comprises at least two unsaturated carbon-carbon bonds in conjugation.

*Sub B2*

6. The film-forming composition of claim 1 wherein R or X is substituted hydrocarbyl and the hydrocarbyl substituent is selected from the group consisting of ketones, esters, alcohols, amides, halogens, urea, urethane, and nitrile substituents.

7. The film-forming composition of claim 1 wherein the ester is prepared by the transesterification reaction between a fatty acid and a glycol.

8. The film-forming composition of claim 1 wherein the ester is an ester derived from a fatty acid of soybean oil, canola oil, or linseed oil.

10. The film-forming composition of claim 1 wherein the ester is an ~~ne~~ glycol monoester derived from a fatty acid of soybean oil.

11. The film-forming composition of claim 1 wherein the ester is a  
ene glycol monoester derived from a fatty acid of soybean oil.

12. The film-forming ~~composition~~ of claim 1 wherein the ester is a  
ethylene glycol monoester derived from a fatty acid of soybean oil.

13. The film-forming composition of claim 1 wherein the ester is a mono-ester derived from a fatty acid of soybean oil.

~~14.~~ The film-forming composition of claim ~~7~~ wherein the fatty acid is an acid derived from soybean oil.

~~15.~~ The film-forming composition of claim 1 wherein the weight of water is about 0.1 % to about 50 % of the weight of the particulate polymer and pre-polymer.

16. The film-forming composition of claim 1 wherein the weight of  
ster is about 0.1 % to about 4 % of the weight of the particulate polymer  
aid pre-polymer.

17. The film-forming composition of claim 1 wherein the continuous phase constitutes at least about 20 wt.% of the film-forming composition.

18. The film-forming composition of claim 17 wherein the ester is an ester derived from a fatty acid of soybean oil, canola oil, or linseed oil.

19. The film-forming composition of claim 1 wherein the dispersed

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5 or continuous aqueous phase further comprises an additive selected from the group consisting of wetting aids, dispersants, thickeners, defoaming agents, biocides, algicides, ultra-violet inhibitors, flow agents, levelling agents, reology modifiers, freeze thaw stabilizing agents, Ph modifiers, flash rust inhibitors, and biocides.

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20. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids and the ester comprises at least about 5 wt.% of the mixture.

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21. The film-forming composition of claim 1 wherein the ester is derived from a fatty acid contained in an oil obtained from a plant or animal and the unsaturated fatty acid comprises at least about 25 wt.% of the fatty acid content of the oil.

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22. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil obtained from a plant or animal, and the unsaturated fatty acid comprises at least about 25 wt.% of the fatty acid content of the oil.

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23. The film-forming composition of claim 1 wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil obtained from a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

22 21  
24. The film-forming composition of claim 23 wherein the film-forming composition contains at least about 20 wt.% water.

23 21  
25. The film-forming composition of claim 23 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-

polymer.

<sup>24</sup>  
~~26~~. The film-forming composition of claim 1 wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

<sup>25</sup>  
~~27~~. The film-forming composition of claim <sup>24</sup>~~26~~ wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer.

<sup>26</sup>  
~~28~~. The film-forming composition of claim 1 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer.

<sup>27</sup>  
~~29~~. The film-forming composition of claim 1 wherein the continuous aqueous phase contains less than about 10 wt.% organic solvent.

<sup>28</sup>  
~~30~~. The film-forming composition of claim 1 wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer and the continuous aqueous phase contains less than about 10 wt.% organic solvent.

<sup>29</sup>  
~~31~~. The film-forming composition of claim <sup>28</sup>~~30~~ wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

<sup>30</sup>  
~~32~~. The film-forming composition of claim <sup>29</sup>~~31~~ wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

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~~33~~. The film-forming composition of claim ~~30~~<sup>28</sup> wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

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~~34~~. A film-forming composition comprising at least about 10 wt.% of a continuous aqueous phase and a dispersed phase, the dispersed phase comprising (i) a particulate polymer or emulsified liquid prepolymer, and (ii) a coalescent aid comprising an ester derived from a fatty acid contained in an oil found in a plant or animal, the ester having the formula  $\text{RCOOX}$  wherein R and X are independently hydrocarbyl or substituted hydrocarbyl and at least one of R and X comprises at least two unsaturated carbon-carbon bonds.

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~~35~~. The film-forming composition of claim ~~34~~<sup>32</sup> wherein at least 95 wt.% of the ester is dissolved in the particulate polymer or liquid pre-polymer and the continuous aqueous phase contains less than about 10 wt.% organic solvent, based upon the weight of the continuous phase.

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~~36~~. The film-forming composition of claim ~~35~~<sup>33</sup> wherein the film-forming composition contains at least about 20 wt.% water, at least about 10 wt.% particulate polymer or liquid pre-polymer, and the weight of the ester is about 0.1 % to about 50 % of the weight of the particulate polymer or liquid pre-polymer.

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~~37~~. The film-forming composition of claim ~~36~~<sup>33</sup> wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid contained in an oil found in a plant or animal, and the unsaturated fatty acid comprises at least about 50 wt.% of the fatty acid content of the oil.

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~~38~~. The film-forming composition of claim ~~37~~<sup>32</sup> wherein the film-forming composition comprises a mixture of coalescent aids, the ester comprises at least about 5 wt.% of the mixture, the ester is derived from a fatty acid

Add A3

[illegible]